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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/617,793	07/14/2003	Yoshiharu Anda	2003_0955A	4076
513	7590	10/21/2004	EXAMINER	
WENDEROTH, LIND & PONACK, L.L.P.			PHAM, THANH V	
2033 K STREET N. W.			ART UNIT	
SUITE 800			PAPER NUMBER	
WASHINGTON, DC 20006-1021			2823	

DATE MAILED: 10/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/617,793		ANDA ET AL.	
	<b>Examiner</b>		<b>Art Unit</b>	
	Thanh V Pham		2823	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 24 August 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 August 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art in combination with Weitzel et al. US 5,693,969.

Applicant's admitted prior art as in fig. 1 and in pages 2-3 of the specification discloses substantially the same GaAs PHEMT as claimed but lacks the gate electrode made of LaB<sub>6</sub>. (The known GaAs PHEMT comprises a Schottky layer 126; and a Schottky electrode 130 that is formed on the Schottky layer and has a Schottky contact with the Schottky layer' wherein the Schottky layer is composed of a compound semiconductor including In and P (InGaP, *re claim 2*), and the portion of the Schottky electrode that touches the Schottky layer is composed of material whose main constituents are not disclosed.)

*Re claims 3 and 5*, the Weitzel et al. reference discloses a Schottky gate 16 made of LaB<sub>6</sub> that creates a Schottky contact with the material used for channel layer (col. 1, line 60 and col. 3, lines 25-27) that helps increasing the breakdown voltage of a FET, does not affect the frequency response, the transconductance and does not require the use of a high resistance refractory gate material (col. 1, lines 15-39). *Re claims 4 and 6*, the applied "technique is suitable for vertical current flow diodes" (col. 1, line 30) and "to the gate of the MESFET" (col. 1, line 17).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the Schottky gate material of Weitzel et al. as the gate electrode of applicant's admitted prior art because the  $\text{LaB}_6$  gate would increase the breakdown voltage of a FET without affecting the frequency response and the transconductance, and does not require the use of a high resistance refractory gate material (Weitzel et al.'s col. 1, lines 32-39).

### ***Response to Arguments***

3. Applicant's arguments filed 08/24/04 have been fully considered but they are not persuasive.

4. The new title, the abstract, the revised specification and the new figs. 1 and 2 enclosed therewith are accepted.

5. Applicant's argument, based on the problem of the applicant's admitted prior art in which the PHEMT has not the gate electrode constituting of La and B, on page 6 of the Remark is irrelevant because only the applicant's admitted prior art's structure is used in the rejection.

6. Applicant's argument based on the damaged layers 17, 18 and the Schottky layer 12, on page 7 of the Remark is also irrelevant because the La and B containing material used for the Schottky gate is used in the rejection.

7. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention

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where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the structure of fig.1 -of applicant's admitted prior art which is the same as the structure of fig. 3, the instant invention, with the only difference in the material that formed the gate electrode 130 and 330- is combined with the material that formed the gate of Weitzel et al.

### **Conclusion**

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


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10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thanh V. Pham whose telephone number is 571-272-1866. The examiner can normally be reached on M-T (6:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 571-272-1855. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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TvP  
10/04/04

  
George Fourson  
Primary Examiner